

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Please add new claims 50-67.

Please amend claims 6-9, 11, 12, 14, 21-24, 26, 29 and 31-38 as indicated below (material to be inserted is in **bold and underline**, material to be deleted is in ~~strikeout~~ or (if the deletion is of five or fewer consecutive characters or would be difficult to see) in double brackets [[]]):

Listing of Claims:

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Previously Presented) A semiconductor device, comprising:

a source electrode;

a drain electrode;

a channel coupled to the source electrode and the drain electrode and comprised of a ternary compound containing zinc, tin and oxygen, where at least a portion of the channel is formed from a zinc-tin oxide compound having the following stoichiometry: Zn_2SnO_4 ; and

a gate electrode configured to permit application of an electric field to the channel.

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5. (Cancelled)
6. (Currently Amended) The semiconductor device of claim 50 [[4]], where the zinc-tin oxide compound is substantially amorphous.
7. (Currently Amended) The semiconductor device of claim 50 [[4]], where one or more of the source, drain, and gate electrodes is fabricated so as to be at least partially transparent.
8. (Currently Amended) The semiconductor device of claim 50 [[4]], where the channel further includes phase-segregated ZnO.
9. (Currently Amended) The semiconductor device of claim 50 [[4]], where the channel further includes phase-segregated SnO₂.
10. (Cancelled)
11. (Currently Amended) The semiconductor device of claim 50 [[4]], where the channel is adapted to be deposited using an RF sputtering process.
12. (Currently Amended) The semiconductor device of claim 50 [[4]], where the source electrode and the drain electrode are formed from an indium-tin oxide material, and are patterned so that the source electrode and drain electrode are physically separate from one another.
13. (Cancelled)

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14. (Currently Amended) ~~A semiconductor device, comprising:~~
~~a source electrode;~~
~~a drain electrode;~~
~~a channel coupled to the source electrode and the drain electrode and comprised~~
~~of a ternary compound containing zinc, tin and oxygen; and~~
~~a gate electrode configured to permit application of an electric field to the~~
~~channel, where the gate electrode is physically separated from the channel by a~~
~~dielectric material, and~~ The semiconductor device of claim 55, where the dielectric
material is an aluminum-titanium oxide material.

15. (Original) The semiconductor device of claim 14, where the dielectric
material includes:

a first outer layer immediately adjacent to and in contact with the channel layer;
a second outer layer immediately adjacent to and in contact with the gate
electrode, where the first and second outer layers are each formed from Al_2O_3 ; and
alternating interior layers of AlO_x and TiO_y between the first and second outer
layers, where x and y are positive nonzero values.

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

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19. (Previously Presented) A three-port semiconductor device, comprising:

a source electrode;

a drain electrode;

a gate electrode; and

means for providing a channel disposed between the source electrode and drain electrode, the means for providing a channel configured to permit movement of electric charge therethrough between the source electrode and the gate electrode in response to a voltage applied at the gate electrode, the means for providing a channel formed at least in part from a ternary compound containing zinc, tin and oxygen, where the means for providing a channel includes means for providing a semiconductor formed from a zinc-tin oxide compound having the following stoichiometry: Zn_2SnO_4 .

20. (Cancelled)

21. (Currently Amended) The semiconductor device of claim [[19]] 57, where the means for providing a semiconductor is substantially amorphous.

22. (Currently Amended) The semiconductor device of claim [[19]] 57, where one or more of the source, drain, and gate electrodes is fabricated so as to be at least partially transparent.

23. (Currently Amended) The semiconductor device of claim [[19]] 56, where the source electrode and the drain electrode are formed from an indium-tin oxide material, and are patterned so that the source electrode and the drain electrode are physically separate from one another.

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24. (Currently Amended) The semiconductor device of claim ~~[[19]]~~ 56, further comprising means for providing a dielectric disposed between and physically separating the gate electrode from the means for providing a channel.

25. (Cancelled)

26. (Currently Amended) The thin-film transistor of claim ~~[[29]]~~ 60, where the thin-film transistor is configured so that the ability of the channel layer to convey electric charge between the first and second electrodes in response to a potential difference applied across the first and second electrodes is dependent upon a gate voltage applied at the gate electrode.

27. (Cancelled)

28. (Cancelled)

29. (Currently Amended) ~~A thin-film transistor, comprising:~~
~~a gate electrode;~~
~~a channel layer formed from a zinc tin oxide material;~~
~~a dielectric material disposed between and separating the gate electrode and the channel layer; and~~
~~first and second electrodes spaced from each other and disposed adjacent the channel layer on a side of the channel layer opposite the dielectric material, such that the channel layer is disposed between and electrically separates the first and second electrodes.~~ The thin-film transistor of claim 61, where at least a portion of the channel layer is formed from a zinc-tin oxide compound having the following stoichiometry: Zn_2SnO_4 .

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30. (Cancelled)
31. (Currently Amended) The thin-film transistor of claim [[29]] 61, where the zinc-tin oxide compound is substantially amorphous.
32. (Currently Amended) The thin-film transistor of claim [[29]] 61, where one or more of the source, drain, and gate electrodes is fabricated so as to be at least partially transparent.
33. (Currently Amended) The thin-film transistor of claim [[29]] 61, where the channel layer further includes phase-segregated ZnO.
34. (Currently Amended) The thin-film transistor of claim [[29]] 61, where the channel layer further includes phase-segregated SnO₂.
35. (Currently Amended) The thin-film transistor of claim [[29]] 60, where one or more of the source, drain, and gate electrodes is fabricated so as to be at least partially transparent.
36. (Currently Amended) The thin-film transistor of claim [[29]] 60, where the channel layer is adapted to be deposited using an RF sputtering process.
37. (Currently Amended) The thin-film transistor of claim [[29]] 60, where the first and second electrodes are formed from an indium-tin oxide material, and are patterned so that the first and second electrodes are physically separate from one another.

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38. (Currently Amended) ~~A thin-film transistor, comprising:~~
~~a gate electrode;~~
~~a channel layer formed from a zinc tin oxide material;~~
~~a dielectric material disposed between and separating the gate electrode and the~~
~~channel layer.~~ **The thin-film transistor of claim 60,** where the dielectric material is an
aluminum-titanium oxide material.

39. (Original) The thin-film transistor of claim 38, where the dielectric material
includes:

a first outer layer immediately adjacent to and in contact with the channel layer;
a second outer layer immediately adjacent to and in contact with the gate
electrode, where the first and second outer layers are each formed from Al_2O_3 ; and
alternating interior layers of AlO_x and TiO_y between the first and second outer
layers, where x and y are positive nonzero values.

40. (Cancelled)

41. (Cancelled)

42. (Cancelled)

43. (Cancelled)

44. (Cancelled)

45. (Cancelled)

46. (Cancelled)

47. (Cancelled)

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48. (Previously Presented) A display, comprising:

a plurality of display elements configured to operate collectively to display images, where each of the display elements includes a semiconductor device configured to control light emitted by the display element, the semiconductor device including:

a source electrode;

a drain electrode;

a channel coupled to the source electrode and the drain electrode and comprised of a ternary compound containing zinc, tin and oxygen, where at least a portion of the channel of the semiconductor device is formed from a zinc-tin oxide compound has the following stoichiometry: Zn_2SnO_4 ; and

a gate electrode configured to permit application of an electric field to the channel.

49. (Cancelled)

50. (New) A semiconductor device, comprising:

a source electrode;

a drain electrode;

a channel coupled to the source electrode and the drain electrode and comprised of a ternary compound containing zinc, tin and oxygen; and

a gate electrode configured to permit application of an electric field to the channel.

51. (New) The semiconductor device of claim 50, where at least a portion of the channel is formed from a zinc-tin oxide compound having the following stoichiometry: $Zn_xSn_yO_z$, where x, y and z have positive non-zero values.

52. (New) The semiconductor device of claim 51, where the zinc-tin oxide compound has the following stoichiometry: $ZnSnO_3$.

53. (New) The semiconductor device of claim 51, where the zinc-tin oxide compound has the following stoichiometry: $(ZnO)_j(SnO_2)_{1-j}$, where j is between 0.05 and 0.95.

54. (New) The semiconductor device of claim 50, where one or more of the source, drain, and gate electrodes is fabricated so as to be at least partially transparent.

55. (New) The semiconductor device of claim 50, where the gate electrode is physically separated from the channel by a dielectric material.

56. (New) A three-port semiconductor device, comprising:

a source electrode;

a drain electrode;

a gate electrode; and

means for providing a channel disposed between the source electrode and drain electrode, the means for providing a channel configured to permit movement of electric charge therethrough between the source electrode and the gate electrode in response to a voltage applied at the gate electrode, the means for providing a channel formed at least in part from a ternary compound containing zinc, tin and oxygen.

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57. (New) The semiconductor device of claim 56, where the means for providing a channel includes means for providing a semiconductor formed from a zinc-tin oxide compound having the following stoichiometry: $Zn_xSn_yO_z$, where x, y and z have positive non-zero values.

58. (New) The semiconductor device of claim 57, where the zinc-tin oxide compound has the following stoichiometry: $ZnSnO_3$.

59. (New) The semiconductor device of claim 57, where the means for providing a semiconductor includes a compound that has the following stoichiometry: $(ZnO)_j(SnO_2)_{1-j}$, where j is between 0.05 and 0.95.

60. (New) A thin-film transistor, comprising:
 a gate electrode;
 a channel layer formed from a zinc-tin oxide material;
 a dielectric material disposed between and separating the gate electrode and the channel layer; and

first and second electrodes spaced from each other and disposed adjacent the channel layer on a side of the channel layer opposite the dielectric material, such that the channel layer is disposed between and electrically separates the first and second electrodes.

61. (New) The thin-film transistor of claim 60, where at least a portion of the channel layer is formed from a zinc-tin oxide compound having the following stoichiometry: $Zn_xSn_yO_z$, where x, y and z have positive non-zero values.

62. (New) The thin-film transistor of claim 61, where the zinc-tin oxide compound has the following stoichiometry: $ZnSnO_3$.

63. (New) The thin-film transistor of claim 61, where the zinc-tin oxide compound has the following stoichiometry: $(ZnO)_j(SnO_2)_{1-j}$, where j is between 0.05 and 0.95.

64. (New) A display, comprising:

a plurality of display elements configured to operate collectively to display images, where each of the display elements includes a semiconductor device configured to control light emitted by the display element, the semiconductor device including:

a source electrode;

a drain electrode;

a channel coupled to the source electrode and the drain electrode and comprised of a ternary compound containing zinc, tin and oxygen; and

a gate electrode configured to permit application of an electric field to the channel.

65. (New) The display of claim 64, where at least a portion of the channel of the semiconductor device is formed from a zinc-tin oxide compound having the following stoichiometry: $Zn_xSn_yO_z$, where x, y and z have positive non-zero values.

66. (New) The display of claim 65, where the zinc-tin oxide compound has the following stoichiometry: $ZnSnO_3$.

67. (New) The display of claim 65, where the zinc-tin oxide compound has the following stoichiometry: $(ZnO)_j(SnO_2)_{1-j}$, where j is between 0.05 and 0.95.

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